

WORLD METEOROLOGICAL ORGANIZATION

(10.06.2022)

CBS LEAD CENTRES FOR GCOS

Original: ENGLISH

REPORT OF THE CBS-LC-NOAA/NCEI FOR GCOS

*(Submitted by Jay Lawrimore, Bryant Korzeniewski, and Byron Gleason
NOAA/National Centers for Environmental Information)*

SUMMARY AND PURPOSE OF DOCUMENT

The document provides a summary of activities of the CBS Region IV Lead Centre-NOAA/NCEI.

DISCUSSION

Background

The National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI) serves as the GCOS Lead Center for Region IV and also as the Global Archive and Analysis Center. Region IV stretches from the Canadian Arctic to the equator. It includes three large countries; USA, Canada and Mexico which contain more than 75% of the surface-based observing stations as well as many smaller countries and island nations that provide critical coverage for weather and climate observations throughout the region. The large number of small nations makes the continuing effort of coordination and support an essential part of ensuring the health of the region's observing network.

This report contains a summary of the state of the surface-based global observing system for GSN and GUAN networks with a specific focus on those provided by Region IV members. NCEI provides monthly updates of web accessible GSN and GUAN reports which provide information on the number of hourly, synoptic, and CLIMAT reports received at the Center. The reports are available at <https://www.ncei.noaa.gov/pub/data/gcos/>.

Representatives from other Lead Centers are invited to review these reports and provide feedback on their usefulness and any recommendations for further changes. There are two basic types of reports; the first providing an annual total of the number of reports received by type and hour of the day and secondly files that provide month-year totals of the number of hourly and synoptic reports received and if CLIMAT data were received.

Performance of the RBCN and GSN networks in Region IV

The performance of a Region IV RBCN inventory consisting of 337 stations is summarized for 2021. Canada and the U.S. have the greatest number of stations providing CLIMAT reports. A subset of 177 Region IV GSN stations also is summarized in this report.

The number of RBCN stations providing at least nine CLIMAT reports each year has remained above 75% since 2010 (Figure 1), computed as a percentage of the current inventory. The GSN network has remained above 85% since 2010. Figure 2 shows the reporting frequency of each GSN station in 2021. The same is shown for RBCN stations in Figure 3. As typically occurs, system outages resulted in several stations providing less than complete annual coverage. This occurred most frequently in remote areas for which unscheduled maintenance cannot be readily performed (Table 1). The greater than 88% coverage of stations with good reporting practices in the GSN network since

2012 indicates the benefit that careful monitoring and attention to the performance of a subset of stations can provide to improving data collection.

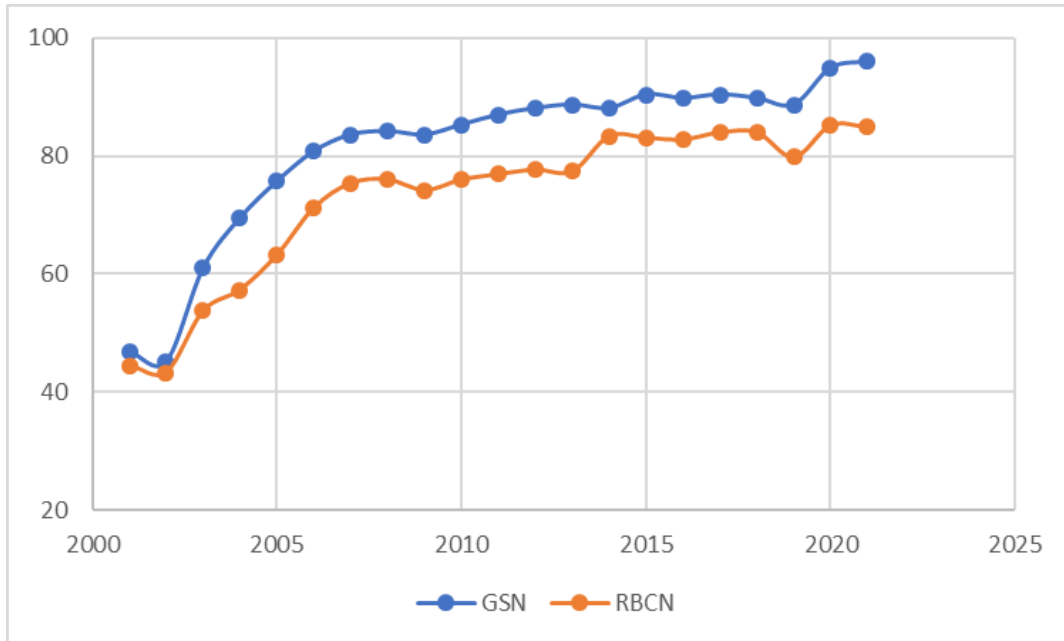


Figure 1. Percentage of Region IV RBCN stations providing CLIMAT reports (orange line) and the subset of GSN stations (blue line) providing CLIMAT reports in at least nine months each year from 2001 through 2021 (as percentages of the respective inventories).

GSN, No. months reporting (202101 to 202112), RED=12, BLUE=6 to 11, GREEN=1 to 5, GRAY=0

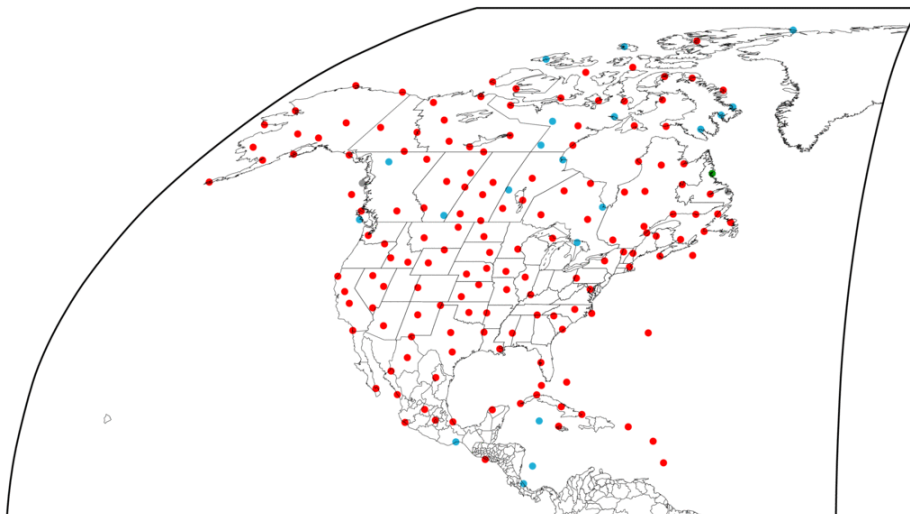


Figure 2. The reporting frequency of the Region IV stations in the GSN network in 2021; stations reporting all 12 months of the year (red), from 6 to 11 reports (blue), 1 to 5 reports (green), and 0 reports (gray).

RBCN, No. months reporting (202101 to 202112), RED=12, BLUE=6 to 11, GREEN=1 to 5, GRAY=0

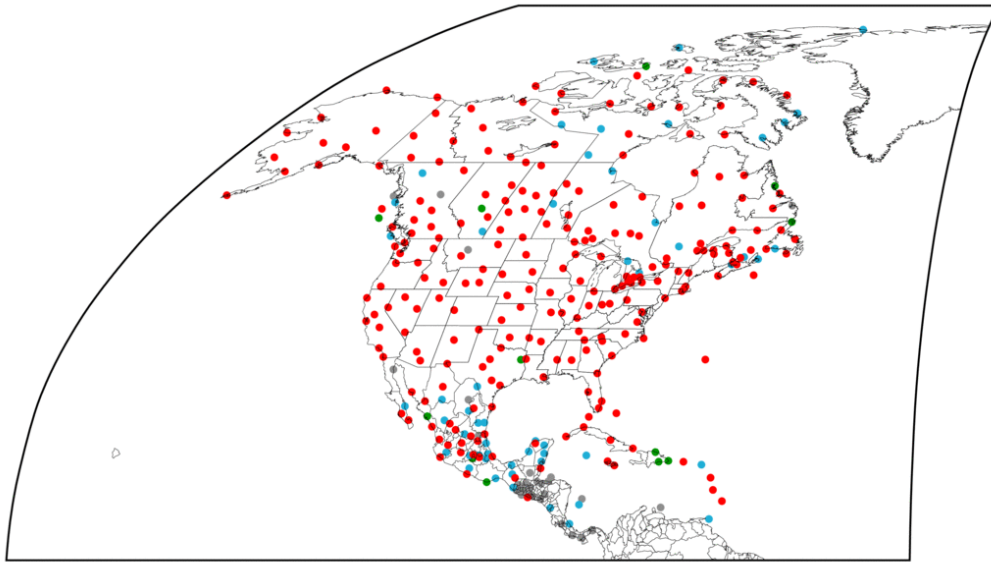


Figure 3. The reporting frequency of the Region IV stations in the RBCN network in 2021; stations reporting all 12 months of the year (red), from 6 to 11 reports (blue), 1 to 5 reports (green), and 0 reports (gray).

The following provides a summary of GSN stations with reporting problems in 2021. There are many other stations that require ongoing personal contact to ensure receipt of data throughout all areas of the Region. The Region IV Lead Center made direct e-mail contact to resolve reporting issues for more than 100 CLIMAT reports for GSN stations in 2021.

Table 1. Region IV GSN stations with reporting issues in 2021.

Data-Months	WMO #	Station Name	Country	Findings
9/2021-Present	76833	Salina Cruz	Mexico	Equipment issue.
12/2019-Present	71818	CARTWRIGHT	Canada	Communications issue.
8/2019-Present	70398	Annette Island	United States	Not enough data to generate a CLIMAT Message.
8/2019-Present	78016	Bermuda NAS	Bermuda	No data received, but reflects as received on OGIMET.
7/2020-2/2-021 and 1/2021-12/2021	71923	Ennadai Lake	Canada	Communications issue.
7/2020-2/2021 and 10/2021-11/2021	71074	Isachsen (Aut)	Canada	Communications issue.
4/2018-9/2021	71828	Schefferville A	Canada	Data issues discovered during Quality Control on Environment Canada's end.
11/2020-7/2021	71665	Nain	Canada	Equipment issue.

11/2021-1/2022	71490	ROBERTSON LA	Canada	Not enough data to generate a CLIMAT Message.
11/2021	72386	LAS VEGAS/MC	United States	Not enough data to generate a CLIMAT Message.
10/2021	71355	Alert Climate	Canada	Communications issue.
10/2021	71956	Gore Bay Climate	Canada	Equipment issue.
9/2021	76775	Oaxaca	Mexico	Equipment issue.
2/2021-9/2021	71066	High LEVEL	Alberta	Being replaced by High Level AB (WMO #73085)
5/2021-8/2021	71049	WAGER BAY	Canada	Communications issue.
7/2021	71989	Mould Bay, CS	Canada	Not enough data to generate a CLIMAT Message.
6/2021	71026	MEDICINE HAT RCS, AB	Canada	Not enough data to generate a CLIMAT Message related to site maintenance.
6/2021	71695	THE PAS CLIMATE, MB	Canada	Not enough data to generate a CLIMAT Message related to site maintenance.
5/2021	80001	SAN ANDRES S	Colombia	No reply received to-date from GCOS Focal Point
4/2021-5/2021	71309	MOOSONEE RCS	Canada	Not enough data to generate a CLIMAT Message.
3/2021-4/2021	71826	Pangnirtung	Canada	Not enough data to generate a CLIMAT Message.
4/2021	71222	DEASE LAKE	Canada	Communications issue.
1/2021-2/2021	71321	Iqaluit Climate	Canada	Equipment issue.

Upper Air Observations

There continued to be a high level of data collected from stations in the GUAN network in the past year, extending benefits of ongoing rehabilitation and system improvement that have occurred in recent decades. In Region IV there were 24 GUAN stations in 2021. Performance was best in the U.S. and Canada as shown in Figure 4, with almost all stations having at least 30 soundings each month reaching 30hPa and 10hPa. The poorest performance continued to occur at Juan SantaMaria (WMO #78762). There were only 15 to 20 OBS per data-month during the first five months of 2021, and no OBS during the last half of the year. Conversely, soundings from Hato airport were much improved in 2021, with at least 55 soundings reaching at least 30mb in every month of the year.

Some of the station reporting problems were due to maintenance issues as noted in Table 2, and in other cases the reason for the poor performance remained unknown

because attempted contact with the representing official was unsuccessful. Overall, and in comparison to other regions (also shown in Table 2), the issues in Region IV were relatively minor, which reflected in the good performance of the Region IV network in 2021.

Note: The reporting issues in Table 2 were compiled by NCEI as part of its contribution to the WMO as the GCOS Archive Center.

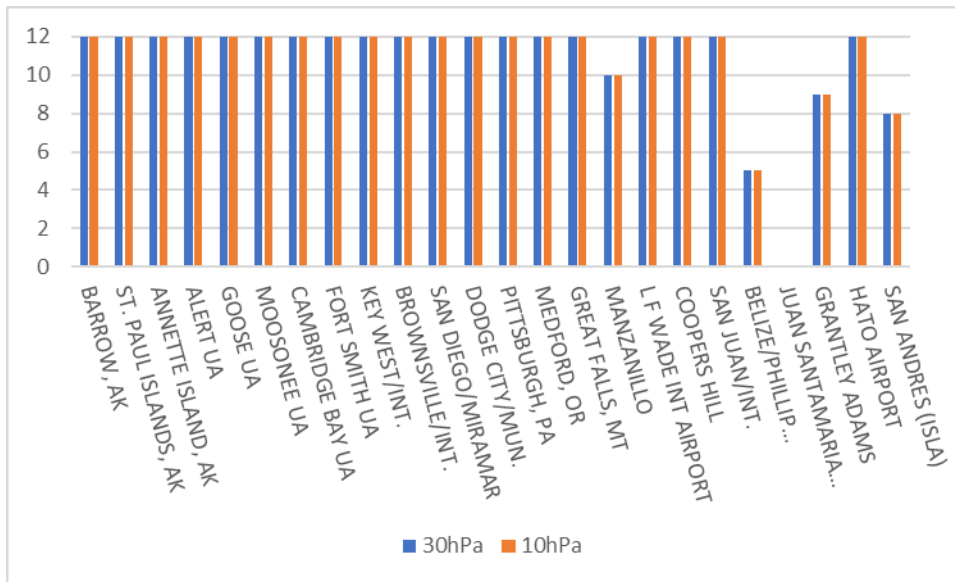


Figure 4. The number of months in 2021 in which at least 30 soundings reached 30 hPa (blue) and 10 hPa (red) for each Region IV GUAN site.

Table 2. GUAN stations with reporting issues in 2021.

Data-Months	Region	WMO #	Station Name	Country	Findings
11/2021-Present	6	17607	Athalassa	Cyprus	NCEI working to get BUFR Messages integrated into IGRA
11/2021-Present	1	63450	ADDIS ABABA-BOLE	Ethiopia	No reply received to-date from GCOS Focal Point
10/2021-Present	2	50527	HAILAR	China	NCEI working to get BUFR Messages integrated into IGRA
10/2021-Present	2	51709	KASHI	China	NCEI working to get BUFR Messages integrated into IGRA
10/2021-Present	2	52681	MINQIN	China	NCEI working to get BUFR Messages integrated into IGRA
10/2021-Present	2	53068	ERENHOT	China	NCEI working to get BUFR Messages integrated into IGRA
10/2021-Present	2	55299	NAGQU	China	NCEI working to get BUFR Messages integrated into IGRA
10/2021-Present	2	56778	KUNMING	China	NCEI working to get BUFR Messages integrated into IGRA
10/2021-Present	2	57461	YICHANG	China	NCEI working to get BUFR Messages integrated into IGRA

9/2021-Present	5	91925	Hiva-Oa	French Polynesia	NCEI working to get BUFR Messages integrated into IGRA
7/2021-Present	2	48327	CHIANG MAI	Thailand	PILOT Observations
7/2021-Present	4	78762	Juan Santamaria Int'l	Costa Rica	No reply received to-date from GCOS Focal Point
7/2021-Present	5	11035	Wien/Hohe Warte, AT	Austria	No reply received to-date from GCOS Focal Point
2/2021-Present	3	84628	Lima-Callao/Chavez, Peru	Peru	Equipment Issues
10/2020-Present	6	01001	Jan Mayen	Jan Mayen	NCEI working to get BUFR Messages integrated into IGRA
6/2020-Present	1	68994	MARION ISLAND	SOUTH AFR	Equipment Issues
4/2020-Present	5	93997	Raoul/Kermadec Is., NZ	New Zealand	NCEI working to get BUFR Messages integrated into IGRA
11/2019-Present	5	91592	NOUMEA (NLLE-CALEDONIE)	New Caledonia	NCEI working to get BUFR Messages integrated into IGRA
11/2019-Present	5	91938	Tahiti-Faaa	French Polynesia	NCEI working to get BUFR Messages integrated into IGRA
11/2019-Present	3	81405	Cayenne Matoury	French Guiana	NCEI working to get BUFR Messages integrated into IGRA
11/2019-Present	1	61980	Saint-Denis/Gillot	Reunion	NCEI working to get BUFR Messages integrated into IGRA
9/2019-Present	6	06610	Payerne	Switzerland	NCEI working to get BUFR Messages integrated into IGRA
8/2019-Present	3	82397	Fortaleza	Brazil	Communications Issues
3/2019-Present	3	84008	San Cristobal	Ecuador	No reply received to-date from GCOS Focal Point
12/2018-Present	1	61998	Kerguelen Islands		NCEI working to get BUFR Messages integrated into IGRA
3/2018-Present	1	67774	HARARE	ZIMBABWE	No reply received to-date from GCOS Focal Point
1/2017-Present	5	91843	RAROTONGA	Cook Islands	Equipment Issues
5/2016-Present	5	91557	Bauerfield	Vanuatu	Equipment Issues
9/2013-Present	5	91517	Honiara	Solomon Islands	Equipment Issues
6/2014-Present	1	62721	Khartoum	Sudan	Equipment Issues
9/2013-Present	5	92035	Point Moresby	Papua New Guinea	Equipment Issues
4/2020-Present	1	61995	Vacoas	Mauritius	No reply received to-date from GCOS Focal Point; PILOT Observations
11/2019-Present	5	96315	Brunei AP	Borneo	PILOT Observations
2/2014-Present	2	41780	Kirachi	Pakistan	Equipment Issues; PILOT Observations
11/2021-3/2022	1	63741	DAGORETTI CORNER	Kenya	No reply received to-date from GCOS Focal Point
2/2021-3/2022	1	64910	Douala, Cameroon	Cameroon	No reply received to-date from GCOS Focal Point; PILOT Observations

8/2021-2/2022	2	43003	BOMBAY / SANTACRUZ	India	No reply received to-date from GCOS Focal Point
7/2021-2/2022	1	68110	Windhoek	Namibia	Equipment Issues
1/2014-9/2014, 11/2014-2/2022	1	63894	Dar es Salaam	Tanzania	Equipment Issues
6/2021-1/2022	1	61052	NIAMEY-AERO	Niger	No reply received to-date from GCOS Focal Point
12/2021	1	61660	DAKAR-DIASS-AIBD	Senegal	No reply received to-date from GCOS Focal Point
12/2021	1	65578	Abidjan	Côte d'Ivoire	No reply received to-date from GCOS Focal Point
11/2021	2	42410	GUWAHATI	India	No reply received to-date from GCOS Focal Point
8/2021-11/2021	2	42809	KOLKATA/DUM DUM	India	PILOT Observations
8/2021-11/2021	2	30230	KIRENSK	Russian Federation	No reply received to-date from GCOS Focal Point
7/2021-11/2021	2	42867	Nagpur Sonegaon	India	NCEI working to get BUFR Messages integrated into IGRA; PILOT Observations
3/2021-11/2021	7	89022	HALLEY	Antarctica	Staffing Issues and COVID-19 Impacts
11/2020-11/2021	6	03953	Valentia Observatory	Ireland	PILOT Observations
6/2021, 9/2021	2	43279	CHENNAI/MINAMBAKKAM	India	PILOT Observations
3/2021-8/2021	6	08001	LA CORUNA	Spain	NCEI working to get BUFR Messages integrated into IGRA
3/2021-8/2021	6	08430	MURCIA	Spain	NCEI working to get BUFR Messages integrated into IGRA
8/2020-8/2021	6	02836	SODANKYLA ARCTIC RESEARCH CENT	Finland	NCEI working to get BUFR Messages integrated into IGRA
7/2019-8/2021	6	17607	Athalassa	Cyprus	NCEI working to get BUFR Messages integrated into IGRA
6/2021	2	43003	BOMBAY / SANTACRUZ	India	No reply received to-date from GCOS Focal Point
2/2021-6/2021	4	78583	Belize/Phillip Goldston	Belize	Equipment Issues
11/2019-5/2021	6	11035	Wien/Hohe Warte, AT	Austria	Data submission issues (unsure of origins of issue itself)
4/2021	4	80001	SAN ANDRES (ISLA)/SESQUICENTEN	Colombia	No email contact per WMO Country Profile Database or via previous email correspondences
12/2020-4/2021	1	68110	Windhoek	Namibia	Communications Issues
8/2018-4/2021	7	89512	Novolazaravskaja	Antarctica	No reply received to-date from GCOS Focal Point
3/2021	5	91643	FUNAFUTI	Tuvalu	No reply received to-date from GCOS Focal Point
9/2020-3/2021	1	68592	King Shaka Int'l AP, SA	SOUTH AFRICA	Equipment Issues

9/2020-3/2021	7	89055	Base Marambio	Argentina	Equipment Issues
7/2020-2/2021	7	89592	Mirnyj	Antarctica	No reply received to-date from GCOS Focal Point
2/2021	5	94995	Lord Howe Is., AU	Australia	Equipment Issues and COVID-19
10/2019-2/2021	1	63450	Addis Adaba	Ethiopia	No email contact per WMO Country Profile Database or via previous email correspondences